

AMENDMENTS TO THE SPECIFICATION

On page 1, please replace the title which appears before paragraph [01] with the following rewritten title:

METHOD FOR OFFLINE-PARAMETERING OFFLINE-PARAMETERIZATION OF A FIELD DEVICE OF THE PROCESS AUTOMATION TECHNOLOGY

On page 1, please replace paragraph [01] with the following rewritten paragraph:

Field of the Invention

[01] The invention relates to a method for offline-parametering parameterization of a field device of the process automation technology with the help of an operating program [[B]] BW running on an operating device B, which operating program communicates with a field device F1 over a data bus D for online parametering parameterization and for which no device description is available describing the offline behavior of the field device F1.

Field of the Invention

On page 1, please replace paragraph [05] with the following rewritten paragraph:

[0005] In the control system, the process flow is monitored and visualized. The control system also enables a direct access for operating, parametering parameterization or configuring individual field devices. Through this access, special settings (e.g. parameters) can be changed in the field devices, or diagnostic functions can be called up.

On page 3, please replace paragraph [012] with the following rewritten paragraph:

[0012] In order to enable an offline parametering parameterization of a particular field device, it is necessary, either to expand an already existing device description for this field device, which describes the offline behavior of this field device, or to produce a new device description, which includes the offline behavior of this field device. For simple field devices, this is immediately possible. For field devices, which possess a comprehensive functionality, and, therefore, exhibit a multitude of parameters with corresponding dependencies, this is, however, not possible without a considerable programming expense. Especially value assignments of variables and calculations are very difficult to describe. Frequently it is not even possible to describe the offline behavior of a complex field device completely with one of the known device description languages. Because of the high programming expense, an offline parametering is e.g. currently not possible in the case of field devices of the PNG-series of Endress+Hauser®.

Page 4, please replace paragraphs [013] and [014] with the following:

Summary of the Invention

[013] Object of the invention is, therefore, to provide a method for offline-parametering offline-parameterization of a field device of the process automation technology. The method should require no great programming expense and be simple and cost favorable to carry out.

[014] The object of the invention is solved by the method according to which the operating program B communicates with a copy of the device software program GS running in the field device F1 and an online field device F1 is simulated thereby. The essential idea of the invention resides therein, that, for offline-parametering offline-parameterization, the operating program communicates not with the device software

program, which runs on a microprocessor in the field device, but, instead, with a copy of the device software program running on a separate computer unit. Consequently, a device description, which describes the special offline-behavior of the field device, is not necessary, since the operating program sees, in effect, an online field device.

On page 5, please replace paragraph [023] with the following rewritten paragraph:

[0023] The control controller PLC communicates over the data bus D with each field device. In this way, data can be transferred between the field devices F1, F2, F3 and the control controller PLC.

On page 6, please replace paragraph [027] with the following rewritten paragraph:

[0027] In the personal computer PC are installed an operating program [[B]] BW and a device software program GS, which both e.g. can operate in the Windows.RTM. operating system. The operating program [[B]] BW is connected with a memory S1, which provides the device descriptions for different field devices and a memory S2 for the storage of parameter values. It has a virtual interface COM8, which is connected with a virtual interface COM9 of the device software program. The device software program GS is a copy of the software running in the field device. This software is referred to also as "embedded software". In order that this software can run in the Windows operating system, the device software program GS is surrounded by a windows shell WH.

On page 7, please replace paragraph [029] with the following rewritten paragraph:

[0029] The method of the invention for offline parametering parameterization is explained in more detail using the example of field device F1 as follows. On a user interface of the operating program running on the operating device, the user chooses the field device F1 to be operated and the operating mode offline parametering parameterization. In the choice online mode, a direct communication over the corresponding interface COM1, COM2 or the interface card would be possible with the device software program GS, which is executed on the microprocessor of the field device F1.

On page 7, please replace paragraph [030] with the following rewritten paragraph:

[0030] The operating program [[B]] BW communicates in the offline mode over the COM8 and COM9 interface with a copy of the device software program GS and sees thus, in effect, the field device F1, as if it were online. The original of the device software program GS runs normally on a microprocessor in the field device F1. The user can now effect the parameter changes in the usual manner. The parameter changes are stored in the memory S2, taking into consideration the dependencies, and, as soon as a communication with the field device F1 is again possible over the field bus, following a confirmation by the user (changed parameter download yes/no), transferred to the field device F1 and stored therein.

On page 8, please replace paragraph [031] with the following rewritten paragraph:

[0031] Since the device software program GS also has a COM1 interface, the operating program [[B]] BW and the device software program GS could also run on two separated computer units connected over a null modem cable.

On page 8, please replace paragraph [032] with the following rewritten paragraph:

[0032] For the case that the field device 1 is not yet known to the operating program, the user selects manufacturer and type of field device F1 from a menu, so that the corresponding device description can be loaded from the memory S1 or, alternatively, e.g. from a diskette. The method of the invention is, therefore, so cost favorable, because the device software (embedded software) is developed and tested on a PC independently of the offline parametering parameterization, and, consequently, the corresponding programs are available anyway.

On page 8, please replace paragraph [033] with the following rewritten paragraph:

[0033] Conceivable also is not to surround the device software program GS with a Windows shell, but rather with a DTM shell, under the FDT/DTM standard. Device software GS and FDT-shell form together a virtual field device DTM, which is referenced in the following as VF-DTM. Such a virtual device driver VF-DTM can be bundled in simple manner in FDT frame applications, such as e.g. FieldCare.RTM. of the firm Endress+Hauser. Together with a normal device DTM, which has no offline functionality, such an associated field device can be operated completely offline. For offline parametering parameterization, the devices DTM then communicates not with the real field device, but, rather, with the virtual device driver VF-DTM.

On page 8, please replace paragraph [034] with the following rewritten paragraph:

[0034] Over a corresponding communications-DMT, COM-DMT, one can, with a virtual device driver VF-DMT, in effect, simulate a field device VF on the data bus D. Thus, an installation with a plurality of real field devices and one or more virtual field devices can

e.g. be completely parametered parameterized in the framework of the planning phase. Along with this, also measurement location designations, TAG-numbers and bus addresses for field devices not yet connected to the bus can be assigned. The operating program B communicates with the field devices not yet connected to the data bus simply by way of the corresponding virtual device driver VF-DTM's.

On page 9, please replace paragraph [036] with the following rewritten paragraph:

[0036] The essential idea of the invention lies in that, for offline parametering parameterization of a field device, the corresponding operating program [[B]] BW communicates with a copy of the device software program GS, which runs on a computer unit independent of the field device.